

A new variety of *Carex duthiei* C.B Clarke var. *bishnae* var. nov. in Sikkim Himalaya

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ABSTRACT

The plant specimens of *Carex duthiei* of Cholommau of North Sikkim studied. During the discourse, the novel characters of *Carex duthiei* C.B. Clarke were observed. It was compared with the existing variety, *Carex duthiei* C.B. Clarke var. *glacialis* also but it was distinct from the existing variety and holds distinctive taxonomic characters. Thus, the paper presented with the proposed name *Carex duthiei* C.B. Clarke. var *bishnae* var. nov. for taxonomic usages.

Keywords: *Carex duthiei*, cyperaceae, Sikkim Himalaya.

1. INTRODUCTION

The genus *Carex* is well represented in alpine vegetation of Sikkim Himalaya. Out of these species, *Carex duthiei* C. B. Clarke is also found growing in the alpine vegetation of Sikkim.

The noteworthy point of the present study is that there is a novel variety that differs with the existing one. It differs in the inflorescence pattern or arrangement. As *Carex duthiei* C. B. Clarke var *bishnae* var. nov. differs from existing variety of *Carex duthiei* C. B. Clarke so the taxonomic keys of the varieties presented.

Thus, the paper deals with the taxonomic information of the newly proposed variety of *Carex duthiei* C. B. Clarke.

2. MATERIALS AND METHODS

The study area is Cholommau, North Sikkim and its geographical area includes alpine vegetation.

Survey and Data collection

The field survey conducted and the data was evaluated at the HARC-QCL Laboratory of Forest and Environment Department, Sikkim.

The sample was handled carefully and measurement were taken which were expressed in mm (millimeters).

Identification

Using the taxonomical keys and referring the literatures, the specimens were identified (Hooker, 1854; Griffith, 1847; Griffith, 1848; Hooker & Thomson,

1855; Hooker, 1872–1897; Hara, 1966; Hara, 1971) at the HARC-Quality Control Laboratory, Forest and Environment Department.

The representative plant specimens deposited in the SSFH (Sikkim State Forest Herbarium), Forest Secretariat, Gangtok following the standard protocol of herbarium preparation.

3. TAXONOMY

Carex duthiei C. B. Clarke, Fl. Brit. India. 6: 731. 1894; Grierson & D.G.Long, Fl. Bhutan 3.1: pl. 12.1994.



Figure 1: *Carex duthiei* C.B Clarke var. *bishnae* var. nov.

Habitat: Open alpine meadow, altitude 3200-4000 m.

Distribution: INDIA: Sikkim: Cholommou, North Sikkim, Uttarachal, Kashmir; CHINA, NEPAL, BHUTAN, USA, PAKISTAN.

Specimen examined: *Carex gracilenta* Boott ex Boeck; Det by : Yano, O. Dec. 2009., Royal Botanical Garden Edinburgh E00509831; *Carex duthiei* C.B. Clarke E00042455; SSFH SK002810 (Holotype), Locality : Cholammou , North Sikkim, Collection Year: 1982. Coll. Norbu, Sonam and Pradhan; SSFH SK005156, SSSFH SK005157 (Isotype).

Descriptions

Plant perennial, 25-37 cm. Rhizome horizontal. Stem sharply trigonous. Inflorescence of 5 spikes with distinct peduncles; two spikes vertically arranged with long peduncled, lowest very long peduncled; spikes length ca.2-3.0 cm, cylindrical shaped. Flowering period June-July. Fruiting period August-September.

Etymology: It is dedicated to Bishnu K. Pradhan who supported during the research work.

Key to the varieties of *Carex duthiei* C.B. Clarke found in Sikkim Himalaya.

1. Plant perennial ca. 15-25 cm tall. Leaves equaling to shortly overtopping culm, blades 3-5 mm wide, Spikes 3-5, Female glumes dark purple-brown, Utricles oblong-obovate to obovate.2
2. Plant perennial ca. 15-25 cm tall. Spikes 4, arranged closely *Carex duthiei* C.B. Clarke Plant perennial ca. 15-25 cm tall. Loosely tufted. Spikes 4, lowest shortly peduncled.3
3. Plant perennial ca. 32 cm tall. Spikes 5, lowest long peduncled. Two spikes at the axil of leaves.4
4. Plant perennial 15-25 cm tall. Leaves blades 3-5 mm wide. Spikes 4. Lowest with short peduncled 5-7mm long. Spikes very small. Utricles small very little inflated. Utricles oblong-obovate to obovate. *Carex duthiei* C.B. Clarke var *glacialis* C.B. Clarke.
5. Culms ca. 30-32 cm tall. Leaves blades ca. 5 mm wide, Spikes 5. Two spikes at the axil of leaves. Spike 20-30 mm long. Lower two spikes peduncled 30-40 mm long, Uppermost three spike short peduncled. *Carex duthiei* C.B. Clarke var *bishnae* var. nov.

4. DISCUSSION AND CONCLUSION

In regards to *Carex duthiei* C.B. Clarke, it is found that its type specimen was collected by Duthie (#4499) from Gurwalal at elevation 13-14,000 ft. whereas *Carex duthiei* C.B. Clarke var *glacialis* C.B. Clarke collected by Hooker from the Sikkim Himalaya at 11-15,000 ft. on 11th June, 1849. Its herbarium is deposited at Royal Botanic Gardens, Kew (K), which are K000998999 and K000998998. (Hooker, 1872-1897). He described that *Carex duthiei* C.B. Clarke var *glacialis* C.B. Clarke has spikes with lowest very shortly peduncled. Further, Hooker described it has stems 2-6 in long with small spikes.

But the newly proposed variety is different from the former variety in the number of spikes. In this study, *Carex duthiei* C.B. Clarke var *bishnae* var nov, has five spikes where the lowest two spikes originated at the axils of leaves. It has variable length of peduncles. So, the type specimen is deposited in Sikkim State Forest Herbarium (SSFH), Forest Department, Gangtok (Fig. 1).

Based on described keys, the new variety, *Carex duthiei* C.B. Clarke var *bishnae* var nov, is proposed in this paper which is having distinct taxonomic characters of spikes, length of spikes, peduncles and plant height.

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Ethical approval

The plant specimens of *Carex duthiei* of Cholammou of North Sikkim was studied in the present work. The ethical guidelines for plants & plant materials are followed in the study for sample collection & identification.

Funding

This study has not received any external funding.

Conflicts of interests

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

REFERENCES AND NOTES

1. Griffith, W. (1847). *Journals of Travels in Assam, Burma, Bootan, Affghanistan and the Neighbouring Countries*, Vol. 1, (Bishop's College Press, Calcutta).
2. Griffith, W. (1848). *Itinerary Notes of plants collected in the Khasyah and Bootan Mountains, 1837-8, in Affghanisthan and Neighbouring Countries 1839 to 1841*, Vol 2, John M'Clelland, F.L.S., J.F. Bellamy, Calcutta.
3. Hara, H. (1966). *The Flora of Eastern Himalaya*, First Report, University of Tokyo, Japan.
4. Hara, H. (1971). *The Flora of Eastern Himalaya*, Second Report, The University of Tokyo Press, Japan.
5. Hooker, J.D. (1854). *Himalayan Journals*, Cambridge University Press.
6. Hooker, J.D. and Thomson, T. (1855). *Flora Indica* Vol. I, W. Pamplin, London.
7. Hooker, J.D. (1872-1897). *The Flora of British India*, Vol. I-VII, Reeve & Co., Kent, London.